

**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF SOUTH DAKOTA**

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**IN THE MATTER OF THE  
APPLICATION OF DEUEL HARVEST  
WIND ENERGY LLC FOR A PERMIT  
OF A WIND ENERGY FACILITY AND  
A 345-KV TRANSMISSION LINE IN  
DEUEL COUNTY**

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**APPLICANT’S RESPONSES TO  
INTERVENOR CHRISTINA  
KILBY’S FIRST SET OF DATA  
REQUESTS TO APPLICANT**

**EL18-053**

Below, please find Applicant’s responses to Intervenor Christina Kilby’s First Set of Data Requests to Applicant.

**1-1) Provide copies of all data requests and responses submitted to or by Deuel Harvest.**

Lisa Agrimonti: Responsive documents will be provided.

**1-2) Produce all manuals, guides, information sheets, manufacturers guides, studies, or reports, that refer or relate to the turbine models selected for the Project.**

Lisa Agrimonti: Deuel Harvest objects to this request as vague, overly broad, and unduly burdensome. Deuel Harvest further objects to this request as not reasonably calculated to lead to the discovery of admissible evidence and seeking information not in the custody or control of Deuel Harvest. Notwithstanding the foregoing objections, Deuel Harvest has produced applicable safety and operations manuals to Commission Staff on an attorneys’ eyes only basis, as authorized by General Electric. In addition, see Table 9-1 in the Application.

**1-3) Produce all studies, reports, and articles that refer or relate to ice-throw from turbines.**

Lisa Agrimonti: Deuel Harvest objects to this request as vague, overly broad, unduly burdensome, and seeking information not in the custody or control of Deuel Harvest. Notwithstanding the foregoing objections, see the Supplemental Direct Testimony of Jacob Baker.

**1-4) Produce all studies, reports, or other documents analyzing turbines 586 feet or taller.**

Lisa Agrimonti: Deuel Harvest objects to this request as vague, overbroad and not reasonably calculated to lead to the discovery of admissible evidence; the turbines proposed for the Project are a maximum of 499 feet. Deuel Harvest further objects to this request as vague, overly broad, unduly burdensome, and seeking documents not within the custody or control of Deuel Harvest.

- 1-5) Produce all written materials that discuss, refer or relate to the turbine manufacturer's recommendations or requirements for turbine maintenance or repair, including safety precautions of workers.**

Lisa Agrimonti: See response to Request 1-2.

- 1-6) Produce all written communications, electronic or otherwise, between Deuel Harvest, its affiliates and agents, with any representative of First District, including but not limited to Luke Muller, and**

Lisa Agrimonti: Deuel Harvest objects to this request as not reasonably calculated to lead to the discovery of admissible evidence.

- 1-7) Produce all written communications, electronic or otherwise, between Deuel Harvest, its affiliates, agents or sub-contractors and any Deuel County official or employee in the last 12 years.**

Lisa Agrimonti: Deuel Harvest objects to this request as overly broad and not reasonably calculated to lead to the discovery of admissible evidence, overly broad, and unduly burdensome. In addition, Ms. Kilby has access to electronic communications Deuel Harvest had with Deuel County through her role as pro hac vice co-counsel in the Deuel County circuit court appeal, Docket No. 19CIV18-000019.

- 1-8) Explain John Knight's role with the Project, including but not limited to any payment, commission, gift arrangement he has with Deuel Harvest or any of Deuel Harvest's affiliates, employees, agents, or contractors.**

Lisa Agrimonti: Deuel Harvest objects to this request as not reasonably calculated to lead to the discovery of admissible evidence. Notwithstanding the foregoing objection, Deuel Harvest has not made any payment, gift, or commission to Mr. Knight.

- 1-9) State the number of participating residences located within (a) 1,000 feet of a turbine; (b) 2,000 feet of a turbine; (c) 1/2 mile of a turbine; (d) 1 mile of a turbine; and (e) 2 miles of a turbine.**

Michael Svedeman:

Distance from Nearest Turbine	Participating Residences	Non-Participating Residences
1,000 feet	0	0
2,000 feet	16	0
2,640 feet (1/2 mile)	34	2
5,280 feet (1 mile)	59	34
10,560 feet (2 miles)	88	91

**1-10) State the number of non-participating residences located within (a) 1,000 feet of a turbine; (b) 2,000 feet of a turbine; (c) 1/2 mile of a turbine; (d) 1 mile of a turbine; and (e) 2 miles of a turbine.**

Michael Svedeman: See response to Request No. 1-10.

**1-11) How many participating landowners are there for the Project?**

Michael Svedeman: Invenergy has over 89,000 acres under lease in Deuel County. The Deuel Harvest North Wind Farm will consist of 41,980 acres under lease within the 48,730 acre Project Area. These 41,980 acres consist of 179 individual agreements with participating landowners.

**1-12) Assuming all turbines are built, how many participating landowners will have a turbine located on their property?**

Michael Svedeman: As described in the Application, Deuel Harvest has identified 124 potential turbine locations, but only up to 112 turbines will be constructed. As such, Deuel Harvest does not currently have a response to this request because the final 112 turbine locations have not been selected.

**1-13) How many participating landowners do not reside in the project area?**

Lisa Agrimonti: Deuel Harvest objects to this request as unduly burdensome and not reasonably calculated to lead to the discovery of admissible evidence. Notwithstanding these objections, Deuel Harvest states that it does not possess the information requested.

**1-14) How many participating landowners reside outside of Deuel County?**

Lisa Agrimonti: Deuel Harvest objects to this request as unduly burdensome and not reasonably calculated to lead to the discovery of admissible evidence. Notwithstanding these objections, Deuel Harvest states that it does not possess the information requested.

**1-15) How many participating landowners reside outside of South Dakota?**

Lisa Agrimonti: Deuel Harvest objects to this request as unduly burdensome and not reasonably calculated to lead to the discovery of admissible evidence. Notwithstanding these objections, Deuel Harvest states that it does not possess the information requested.

**1-16) How does the disclosure of easement agreements result in commercial and competitive harm?**

Lisa Agrimonti: Deuel Harvest objects to this request because it seeks legal analysis.

**1-17) How many individuals have signed agreements with Deuel Harvest?**

Lisa Agrimonti: Deuel Harvest objects to this request because it is not reasonably calculated to lead to the discovery of admissible evidence and is vague in its use of "agreements." Deuel Harvest further objects to this request as overly broad and unduly burdensome because it is not limited in time or scope. Notwithstanding these objections, see response to Request No. 11.

**1-18) Do all of the contracts any individual has signed regarding the Project contain confidentiality agreements?**

Lisa Agrimonti: Deuel Harvest objects to this request because it is not reasonably calculated to lead to the discovery of admissible evidence and is vague in its use of "contracts." Deuel Harvest further objects to this request as overly broad and unduly burdensome because it is not limited in time or scope.

**1-19) How many residents of Deuel County will be hired for the construction of the project?**

Lisa Agrimonti: Deuel Harvest objects to this request because it is vague with respect to the phrase "hired for construction."

Michael Svedeman: Subject to and without waiving that objection, Deuel Harvest does not currently know how many Deuel County residents will work on some aspect of Project construction. This depends on qualifications and expertise of local residents, as well as the availability of a local workforce. As stated in Section 20.1.2.2 of the

Application, “The Applicant anticipates that trained local labor would not be sufficient to fill the number of jobs available. Most of the non-local construction workforce would probably travel within an 85-mile radius, and within that radius, the largest city that would provide workers would be Sioux Falls, South Dakota, followed by Watertown, South Dakota. Workers within the 85-mile radius would likely not need additional temporary or permanent housing at the Project Area but would commute. The Project would have a less than significant impact on overall population and occupation distribution in the Project Area.”

**1-20) Describe and explain Deuel Harvest’s policy regarding gifts made to proponents of the project.**

Lisa Agrimonti: Deuel Harvest objects to this request as not reasonably calculated to lead to the discovery of admissible evidence.

Michael Svedeman: Subject to and without waiving that objection, Deuel Harvest does not have a specific policy. Deuel Harvest often provides food at landowner dinners and meetings while giving updates on the Project to landowners. In addition, Deuel Harvest occasionally provides items such as hats, t-shirts, stickers, and similar items.

**1-21) Identify any Deuel county commissioner or planning or zoning board member that has ever executed any agreement with Deuel Harvest. Provide any such agreement.**

Lisa Agrimonti: Deuel Harvest objects to this request because it is not reasonably calculated to lead to the discovery of admissible evidence. Notwithstanding this objection, Deuel Harvest states that this information was previously provided to Intervenor as part of Docket No. 19CIV18-000019.

**1-22) Identify all Deuel County lease agreements that have been released, including the landowners and dates of release.**

Lisa Agrimonti: Deuel Harvest objects to this request because it is not reasonably calculated to lead to the discovery of admissible evidence. This information was previously provided to Intervenor as part of Docket No. 19CIV18-000019.

**1-23) Identify any agreements other than lease or easements agreements that Invenergy has utilized in the last 12 years.**

Lisa Agrimonti: Deuel Harvest objects to this request as vague, overly broad, unduly burdensome, and not reasonably calculated to lead to the discovery of admissible evidence. Deuel Harvest also objected because the request seeks confidential information and there is no confidentiality agreement in place.

- 1-24) Has Invenergy or any of its affiliates utilized property value guarantees in the past? If so, please provide.**

Michael Svedeman: No. Neither Invenergy nor any of its affiliates has ever implemented a property value guarantee.

- 1-25) Identify all other wind projects in which Invenergy, its affiliates, subsidiaries or companies in which Invenergy owns a controlling interest, have been involved within the last 12 years. For each project, identify all applicable setbacks and noise restrictions.**

Lisa Agrimonti: Deuel Harvest objects to this request as vague with respect to its use the phrase "have been involved with." Deuel Harvest further objects to this request as overbroad, unduly burdensome, and not reasonably calculated to lead to the discovery of admissible evidence.

- 1-26) Does Deuel Harvest, Invenergy, or any affiliate use a commission system or bonus system to anyone responsible for acquiring lease agreements? If so, provide names of all individuals who will receive commission or bonus for acquiring lease agreements for Deuel Harvest.**

Michael Svedeman: No.

- 1-27) Describe Gene May's position and role in the project.**

Michael Svedeman: Gene May is an independent consultant hired by the Applicant to perform tasks such as land leasing and community outreach.

- 1-28) Please explain the connection between Deuel Harvest Wind Energy, LLC and Invenergy, LLC.**

Michael Svedeman: This information is already provided in Section 1.0 of the Application.

- 1-29) When will Deuel Harvest apply for an application from the SD PUC for the Deuel Harvest South project?**

Michael Svedeman: The timing of such an application has not been determined.

**1-30) When will Deuel Harvest re-apply for a special exception permit in Deuel County?**

Michael Svedeman: Deuel Harvest plans to submit an SEP application for the Project in Spring 2019.

**1-31) Has any, employee, representative, or agent of Deuel Harvest or Invenergy attended or participated in a hearing or meeting of the Deuel County Commission, Deuel County Board of Adjustment, or Deuel County Planning and Zoning where a county official present was under contract with Deuel Harvest or Invenergy? If so, please provide date of said meeting or hearing.**

Lisa Agrimonti: Deuel Harvest objects to this request as overly broad, unduly burdensome, and not reasonably calculated to lead to the discovery of admissible evidence.

**1-32) What parts of the turbines are recyclable? Please provide supporting evidence.**

Lisa Agrimonti: Deuel Harvest objects to this request as vague and ambiguous and not reasonably calculated to lead to the discovery of admissible evidence.

**1-33) Please provide an estimate of the cost to separate recyclable materials from non-recyclable materials. Provide supporting evidence.**

Lisa Agrimonti: Deuel Harvest objects to this request because it is vague, overly broad, and unduly burdensome. Information concerning decommissioning of the Project was already provided in the Decommissioning Cost Analysis filed as Appendix U to the Application.

**1-34) What size of an area is required to dispose of non-recyclable materials from all turbines proposed in the Project?**

Lisa Agrimonti: Deuel Harvest objects to this request because it is vague and not reasonably calculated to lead to the discovery of admissible evidence.

**1-35) Where will the non-recyclable materials from the turbines, including all parts, be disposed?**

Lisa Agrimonti: Deuel Harvest objects to this request because it is premature and not reasonably calculated to lead to the discovery of admissible evidence.

**1-36) What is the lifetime of the proposed turbines? Provide evidence to support this claim.**

Michael Svedeman: As noted in Section 19.0 of the Application, the life of the Project is anticipated to be 30 years and Deuel Harvest may extend the life of the Project.

**1-37) Provide evidence supporting the estimated 30 year life of the Project.**

Lisa Agrimonti: Deuel Harvest objects to this request as vague regarding its use of the word "supporting." Deuel Harvest further objects to this request as not reasonably calculated to lead to the discovery of admissible evidence.

**1-38) How often do blades need to be replaced on the proposed turbines? Provide evidence.**

Lisa Agrimonti: Deuel Harvest objects to this request as not reasonably calculated to lead to the discovery of admissible evidence.

**1-39) What is the current status of Williams v. Invenergy?**

Lisa Agrimonti: Deuel Harvest objects to this request as not reasonably calculated to lead to the discovery of admissible evidence. Notwithstanding this objection, this lawsuit was settled and dismissed in January 2017.

**1-40) What is the current status of Andre v. Invenergy?**

Lisa Agrimonti: Deuel Harvest objects to this request as not reasonably calculated to lead to the discovery of admissible evidence. Notwithstanding this objection, Deuel Harvest states that the litigation is on-going.

**1-41) How many individuals have worked so far on the Project in any capacity, including all employees, staff, attorneys, representatives, agents, contractors and consultants?**

Lisa Agrimonti: Deuel Harvest objects to this request as vague, overly broad, unduly burdensome, and not reasonably calculated to lead to the discovery of admissible evidence.

**1-42) Provide all turbine manufacturer information referring to fire risks, fire prevention, fire mitigation and fire control.**



Lisa Agrimonti: Deuel Harvest objects to this request as vague, overly broad, unduly burdensome, not reasonably calculated to lead to the discovery of admissible evidence, and seeking information not in the custody or control of Deuel Harvest.

**1-43) What is the chance of fire in a turbine in a year? Provide evidence.**

Jacob Baker: Turbine fires are rare. Invenergy has experienced a fire at one turbine in its fleet in approximately 15 years of owning and operating wind projects. At this time, Invenergy operates over 4,800 MW of wind turbines. Invenergy staff and local emergency responders responded to the incident, and the fire extinguished on its own. There were no injuries or property damage as a result of this incident. The fire occurred in 2013 at the Forward Energy Wind Center, which was constructed in 2008 and is located in Dodge and Fond du Lac counties, Wisconsin. A new nacelle, hub, and blade set were installed, and the turbine was returned to service.

**1-44) What flammable materials are used in or contained in the turbines?**

Lisa Agrimonti: Deuel Harvest objects to this request because the specific materials used in turbines are confidential and proprietary.

Jeff Kopp: Subject to and without waiving that objection, none of the material at the site meets the criteria listed in the Resource Conservation and Recovery Act (“RCRA”) to be classified as hazardous material

**1-45) Did Invenergy disclose the flammable chemicals or flammable materials contained in the wind turbines to the Deuel County Board of Adjustment at the time of Invenergy’s special exception permit application? Provide evidence.**

Lisa Agrimonti: Deuel Harvest objects to this request because it is not reasonably calculated to lead to the discovery of admissible evidence. See response to Request No. 1-44.

**1-46) How are turbine fires handled?**

Jacob Baker: Deuel Harvest will coordinate fire emergency plans and hold emergency response drills at the Project with local fire departments both before the Project becomes operational and annually thereafter.

**1-47) Do the turbines require cleaning? If so, describe the process used, including any chemicals used.**

Jacob Baker: We pride ourselves on turbine cleanliness. During the routine maintenance, we clean all internal aspects of the turbine (decks / nacelle, hub). We also do a visual inspection of the outside of the turbine and will contract with an outside company to have it cleaned if needed. We use Simple Green or Natural Blue cleaner for 99 percent of all cleaning.

**1-48) What gives Deuel Harvest the authority to cause noise, flicker, infrasound, air turbulence on and over non-participating land. Provide evidence.**

Lisa Agrimonti: Deuel Harvest objects to this request as presenting legal arguments to which no response is required.

**1-49) Page 6 of the Shadow Flicker Study says “County Ordinance requires that residential inhabited buildings receive no more than 30 hours of shadow flicker per year.” Cite the location in the ordinance that states the setback is from “inhabited” residences.**

Lisa Agrimonti: Deuel Harvest objects to this request to the extent that it calls for legal analysis. Subject to and without waiving that objection, Section 1215.03(13)(b) states: "Limit for allowable shadow flicker at existing residences to no more than 30 hours annually." The Merriam-Webster dictionary, for example, defines "residence" as, among other things "the act or fact of dwelling in a place for some time," "the place where one actually lives as distinguished from one's domicile or a place of temporary sojourn," and "a building used as a home."

**1-50) Did the Shadow Flicker Study include uninhabited residences?**

Michael Svedeman: The Shadow Flicker Study included inhabited residences within approximately 1.25 miles of any turbine. However, in certain areas such as the uninhabited and under construction residences of Mr. John Homan, the Applicant included information in its Shadow Flicker Study.

**1-51) Identify alternative locations for turbines within two miles of the Homan runway.**

Lisa Agrimonti: Deuel Harvest objects to this request because it is vague. It is unclear whether Intervenor seeks a distinction between turbine locations that are primary or alternates, or whether Intervenor is asking Deuel Harvest to move turbines within two miles of the "Homan runway" to a different location.

**1-52) Identify specific implications to the project for removing turbines within two miles of the Homan runway.**

Lisa Agrimonti: Deuel Harvest objects to this request because its use of the phrase "specific implications to the project" is vague.

Michael Svedeman: Subject to and without waiving that objection, utilizing the map as identified in John Homan Response to Deuel Harvest Request 1-21 and Attachment 3 thereto for the location of the "Homan runway", removing all turbines within two miles of the grass airstrip on the Homan property would result in the removal of 16 turbines (T105 – T108, T112 – T117, and T119 – T124), with corresponding negative impacts on the landowners on whose properties those turbine locations are proposed and who wish to host Project turbines.

**1-53) How many of the Deuel County landowners who have signed lease agreements for the project are not getting turbines placed on their property?**

Michael Svedeman: As indicated previously, Deuel Harvest will construct 112 of the 124 turbine locations identified in the Application and does not have a final response to this request at this time.

**1-54) Provide all complaints regarding noise, flicker, health complaints, sleep disturbance, or infrasound that has been submitted to Invenergy or any affiliate, or to any employee or agent of Invenergy or any affiliate in the last 12 years.**

Lisa Agrimonti: Deuel Harvest objects to this request as ambiguous, overly broad, unduly burdensome, and not reasonably calculated to lead to the discovery of admissible evidence.

**1-55) Identify the number of complaints submitted to Invenergy regarding ice being thrown or falling from a turbine. Produce any documents, reports, communications, studies, complaints, or the like related to any such complaint.**

Lisa Agrimonti: Deuel Harvest objects to this request as ambiguous, overly broad, unduly burdensome, and not reasonably calculated to lead to the discovery of admissible evidence.

Jacob Baker: Subject to and without waiving those objections, I am aware of one landowner notifying Invenergy of ice throw from a turbine at a Michigan facility.

**1-56) Identify the number of settlement agreements Invenergy or any of its affiliates have been a party to in the last 12 years.**

Lisa Agrimonti: Deuel Harvest objects to this request because it is overly broad and not reasonably calculated to lead to the discovery of admissible evidence.

**1-57) What is the highest dBA of any sound occurrence that will occur, however briefly, at any of the receptor sites? Provide evidence.**

Mike Hankard: The highest predicted sound level that will occur at a non-participating residence is 44.9 dBA. The methodology used to predict this level is very conservative, however, and thus actual levels are expected to be at least 1 dBA less than this (44 dBA). The "evidence" of this is explained in the Pre-Construction Wind Turbine Noise Analysis for the Proposed Deuel Harvest North Wind Farm report prepared by Hankard Environmental (Appendix D to the Application). The primary evidence is that Hankard Environmental has measured noise levels from operating wind farms, and "validated" our noise modeling process using this data. We know from this experience that wind turbine noise levels will never exceed our predicted levels, even briefly.

**1-58) How will any complaints regarding the Project be handled?**

Michael Svedeman: Deuel Harvest understands that the Commission has a complaint reporting process and has required that recent wind projects engage a public liaison; Deuel Harvest anticipates that these measures would apply to the Project, as well. With respect to operation of the Project, Deuel Harvest will have a local O&M building with full-time, local staff for the Project to whom local residents could contact with any concerns.

**1-59) How many complaints have been made regarding noise caused by any wind energy facility Invenergy or any of Invenergy's affiliates have ever owned, operated, or otherwise been involved with?**

Lisa Agrimonti: See response to Request No. 54.

**1-60) What other projects for Invenergy, or any of its affiliates has Mr. Hankard provided testimony?**

Mike Hankard: I have provided testimony for many Invenergy projects at both state and county levels. At the state level, I have testified in Minnesota for the Freeborn Wind Farm, and in Rhode Island for the Clear River Energy Center. At the county level I have testified for numerous projects in Illinois, Iowa, and Pennsylvania.

**1-61) What other projects for Invenergy has Mr. Hankard provided testing or predictions?**

Mike Hankard: I have conducted noise level testing (measurements) on Invenergy projects in Nebraska (Prairie Breeze Wind), Willow Creek Wind (Oregon), and Illinois (California Ridge Wind). I have provided noise level predictions for Invenergy projects in Colorado (Spring Canyon Wind), Nebraska (Prairie Breeze and Upstream), Iowa (Ida Grove and Richland Wind), Illinois (McLean Wind, Bishop Hill Wind, and Grand Ridge Wind), Ohio (Hardin Wind), Minnesota (Freeborn Wind), New York (Canisteo and Alle-Catt Wind), West Virginia (Beech Ridge Wind). This is a relatively complete list, but perhaps not exhaustive.

**1-62) How much infrasound does one of the proposed turbines produce? Provide evidence and explain.**

Mike Hankard: Infrasound produced by wind turbines has been successfully and repeatedly measured by researchers in the U.S. [1], Germany [2], Japan [3], and France [4]. The measured levels are generally less than about 60 dB (linear, not dBA) in the 1 to 10 Hertz range. These levels are orders of magnitude below the human threshold of hearing at these frequencies. In addition, these levels are less than those experienced by riding in a car or airplane, and similar to the levels of infrasound experienced near the ocean.

References are [1] Walker et al, "Shirley Wind Cooperative Study", 2012, [2] Ministry for the Environment, Climate and Energy of the Federal State of Baden-Wuerttemberg, "Low frequency noise including infrasound from wind turbines and other sources," 2016, [3] Ministry of the Environment Japan, "Investigation, Prediction and Evaluation of Wind Turbine Noise in Japan," Inter-Noise, 2016, and [4] National Agency for Food Safety, Environment and Labor, "Health affects of noise from wind turbines," France, 2017.

**1-63) How is infrasound measured? Provide evidence and explain.**

Mike Hankard: Infrasound is typically measured using a microphone and associated sound level meter capable of measuring down to less than 1 Hertz. It can also be measured using a micro-barometer. As with any environmental sound or noise it can be expressed in a variety of ways. The most common are one-third octave bands (linear decibels, dB), or fast-Fourier transform ("FFT") levels of specified band width (dB).

**1-64) What is the predicted level of infrasound at residences within two miles of a project turbine? Provide evidence and explain.**

Mike Hankard: Levels of infrasound within two miles of the Deuel Wind Farm are expected to be similar to those measured by the international studies cited above, which are 60 dB or less in the 1 to 10 Hertz range.

**1-65) How far does infrasound travel? Provide evidence and explain.**

Mike Hankard: Infrasound has been measured using sensitive equipment many miles from operating wind turbine farms (Infrasound and low frequency noise from wind turbines: exposure and health effects, Bolin et al, 2011).

- 1-66) Provide evidence that the infrasound produced by the turbines will not lead to stress, sleep disturbance, and negative health effects in animals or people.**

Lisa Agrimonti: See the Supplemental Testimony of Dr. Mark Roberts and Dr. Jeffrey Ellenbogen.

- 1-67) State the farthest distance ice has been thrown from a turbine.**

Lisa Agrimonti: Deuel Harvest objects to this request to the extent that it seeks information not within the custody or control of Deuel Harvest.

Jacob Baker: See response to Request No. 55. The farthest distance I am aware of ice being thrown from a turbine is 436 feet. The turbine was not enabled with an ice detection system.

- 1-68) State the furthest distance for which a blade or piece of blade has been thrown from a turbine.**

Lisa Agrimonti: Deuel Harvest objects to this request to the extent that it seeks information not within the custody or control of Deuel Harvest.

Jacob Baker: In the rare event of a blade failure, the blade typically falls to the base of the turbine

- 1-69) Provide any evidence that the South Dakota Public Utilities Commission has a duty to maximize profits to Deuel Harvest.**

Lisa Agrimonti: Deuel Harvest objects to this request as legal argument to which no response is required.

- 1-70) Page 36 of Deuel Harvest's Bird and Bat Conservation Strategy Table 3.2 shows a significant difference in Estimated Bat Carcasses/Megawatt/Year at the Lakefield, MN project. Does the source for that estimate, Westwood Professional Services, utilize a different method of determining estimated bat carcasses than Chodachek et al. and Derby et al.?**

Andrea Giampoli: Yes, the estimates were determined using different models, including Huso et al. 2012 (used by Westwood), and Shoenfeld 2004 and Huso 2011, which were used by Chodachek et al. and Derby et al. There may also be differences in estimates due to different post-construction monitoring methods, such as search interval, size of search area, and landscape, which is the data that is put into the model.

**The following questions are asked of Dr. Jeffrey Ellenbogen regarding his Pre-filed Direct Testimony dated February 14, 2019:**

**1-71) Did the Health Canada Study include any measurements of infrasound?**

Dr. Jeffrey Ellenbogen: The Health Canada Study studied a wide spectrum of noise, including low frequencies. Since the low frequencies correlated with A-weighted frequencies, the study focused the analyses and discussion of its findings with respect to A-weighted noise.

**1-72) Are you familiar with any studies done by Mariana Alves-Pereira?**

Dr. Jeffrey Ellenbogen: Yes. She has written at length about a problem she refers to as “vibroacoustic disease.” This is not an accepted disease by the medical community, and she does not appear to be a credible expert.

**1-73) Are there any scientific studies regarding the psychological effects of the visual stimulation caused by multiple spinning turbines?**

Dr. Jeffrey Ellenbogen: A number of psychological outcomes were measured by the Health Canada Study, and in those circumstances, there were many turbines in operation at the same time. Some participants in the study found the visual aspects of wind turbines to be annoying.

**1-74) What is your experience regarding psychological effects of continued, uncontrollable sound?**

Dr. Jeffrey Ellenbogen: Regarding my experience: I am a neurologist and a sleep specialist and my research deals with sound.

**1-75) Can annoyance lead to stress?**

Dr. Jeffrey Ellenbogen: Annoyance can lead to stress. Because of this possibility, the Health Canada Study measured stress, both subjective experience and objective measurements. Neither demonstrated a relationship to wind turbine noise.

**1-76) What are the health effects caused by prolonged stress?**

Dr. Jeffrey Ellenbogen: With respect to wind turbine noise, according to the Health Canada Study, there does not appear to be an effect of stress from wind turbine noise.

**1-77) Does sleep deprivation cause health effects?**

Dr. Jeffrey Ellenbogen: Prolonged and severe sleep deprivation can lead to health effects. Because of this possibility, the Health Canada Study measured the effect of wind turbine noise on sleep, both subjective experience and objective measurements. Neither demonstrated a relationship to wind turbine noise.

**1-78) What are the physical effects of pro-longed sleep disturbance?**

Dr. Jeffrey Ellenbogen: With respect to wind turbine noise, according to the Health Canada Study, there does not appear to be an effect of sleep disturbance.

**1-79) Are there scientific studies showing infrasound does not cause sleep disturbance? Please provide.**

Dr. Jeffrey Ellenbogen: Infrasound and audible sound correlate when dealing with wind turbine noise. In that respect, the Health Canada Study is an example of infrasound not disrupting sleep.

**1-80) Are you aware of any documented reports of infrasound being used as a weapon?**

Dr. Jeffrey Ellenbogen: No, I am not aware of substantiated claims that infrasound has been used as a weapon.

**1-81) Why do you believe Mr. James and Mr. Punch are not qualified to identify or refute connections between wind turbines and human health?**

Lisa Agrimonti: Deuel Harvest objects to this request as calling for a legal conclusion.

Dr. Jeffrey Ellenbogen: Subject to and without waiving that objection, they have neither the training nor experienced to provide expert opinion about health effects.

**1-82) How many wind project hearings have you testified at?**

Dr. Jeffrey Ellenbogen: Over the course of my career, I have provided testimony at eight wind project hearings.



- 1-83) Have you heard of any people moving out of their homes after nearby wind turbines became operational as a result of symptoms they began to experience? If so, what is your explanation for this.**

Dr. Jeffrey Ellenbogen: Yes, I am aware of some examples of people leaving their homes after wind turbines became operational. I believe the explanations for these cases should be handled on a case-by-case basis, rather than generalities. But if I were to consider one common theme, it would include the fact that many people have been provided false information about the health effects caused by wind turbines. This so-called “nocebo” effect has been demonstrated to exist with respect to wind turbines.

- 1-84) Did you hear the testimony of Vicki May during the SD PUC evidentiary hearing for Prevailing Wind Park LLC? If so, how would you explain the symptoms she experienced?**

Dr. Jeffrey Ellenbogen: I am not familiar with the testimony of Vicki May.

Dated this 26th day of March, 2019.

By */s/ Lisa Agrimonti* \_\_\_\_\_

Mollie M. Smith

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